

Algorithmic Decision Making: Can Artificial Intelligence and the Metaverse Provide Technological Solutions to Modernise the United Kingdom's Legal Services and Criminal Justice?

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Abstract: Artificial intelligence (AI), machine learning (ML) and deep learning (DL) have had a profound impact on various sectors including Banking (Fin Tech), Health (HealthTech) and Charitable Fundraising (Charity Tech). The 'natural' ability of an AI system to independently perform and, often, outthink its human-counter parts by developing 'intelligence'(simulating human intelligence) through its own experiences and processing deep layers of information i.e., complex representations of data, and learn has resulted in astounding improvements in the completion of tasks that are complex and technical, time-consuming.AI, with the ease of working with the most granular level of detail, can identify people and objects, recognise voices, uncover patterns and, in advance, screen for problems. Yet, RegTech (or LawTech/LegalTech) has not seen the same level of advancement. AI can provide solutions and enormous economic, political, and social benefits – in terms of public service administration. *The purpose of this article is to explore advents in AI (ML and DL) and whether the criminal justice system, in the United Kingdom (UK), which is heavily overburdened, could benefit from some of the advances that have taken place in other sectors and jurisdictions, and whether automation and algorithmic decision making could be used to modernise it.* This research draws on domestic and international published law, regulation, and literature, and is set out in six parts, the first part views the position of the criminal justice system i.e., issues, part two then looks at relative technological advancements in AI, and the *Metaverse*. Part three explores current advents in AI relating to RegTech (LawTech/LegalTech) and how, if at all, the CJS can use this technology. Part four explores what aspects of the U.K.'s CJS would be fit for automation. Part five focuses on those matters pertaining to AI that pose problems in relation to matters in part 4 i.e., AI discrimination and bias, and explores safeguarding and mitigation including the requirement for explanation as set out in the GDPR. Part six concludes the discussion with some recommendations, as at, January 2024. It is suggested that AI and algorithmic decision making, with the correct legal framework and safeguards in place, could assist in modernising the CJS focussed legal functions, services in law firms, innovating for the next decade. This work is original and timely given the increased debate relating to how AI can assist in modernising the U.K.'s CJS, the global criminal justice challenges, solutions, and what, if any, role the *Metaverse* can play.

Keywords: Reg Tech, Algorithmic Decision Making, Criminal Law, Deep Learning, Machine Learning, Artificial Intelligence and Criminal Justice.

INTRODUCTION

Artificial intelligence (AI), machine learning (ML) and deep learning (DL) have had a profound impact on various sectors including Banking (Fin Tech), Health (Health Tech) and Charitable Fundraising (Charity Tech). The natural ability of an AI system to independently perform and, often, outthink its human-counterparts by developing intelligence (simulating human intelligence) through its own experiences and processing deep layers of information i.e., complex representations of data, and learn has resulted in astounding improvements in the completion of tasks that are complex and technical, time-consuming.AI, with the ease of working with the most granular level of detail, can identify people and objects, recognise voices, uncover patterns and, in advance, screen for problems. RegTech, also referred to as LawTech or LegalTech, is defined in this article, for the first time, as the branch of AI whose application is focussed on

solutions designed to modernise legal services and functions, judicial decision-making, and regulatory compliance processes. For this research the focus is on AI and the Criminal Justice System including algorithmic decision making. AI can provide solutions and enormous economic, political, and social benefits – in terms of public service administration. AI, ML and DL have become commonplace terminology, often used synonymously but all three have distinct meanings (discussed later). The innovation that AI heralds has intimately woven itself into the fabric of technology systems as business, charities (Singh *et al.*, 2020), government, health industry and services (The Emergency Medical Services in Copenhagen, 2021) and regulators (FCA, 2017) seek to draw the benefits it brings in terms of cost reduction, and original or 'avant-garde' solutions. Yet, RegTech has not seen the same level of advancement (The Law Society Research Report, 2019). The purpose of this article is to explore whether advents in AI, ML and DL, and the *Metaverse*, could assist in modernising the legal functions, services, and processes in the UK, and what, if any, issues would need to be tackled i.e., bias or AI

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discrimination, and potential solutions, as at, January 2024.

CURRENT PROBLEMS

Criminal Justice in the UK is sluggish, with issues relating to administration, effective use of the Court Estate, delays in disclosure and exchange of evidence. Many of the processes and procedures are outdated and have failed to harness the advents of the technological revolution. This adds to huge case backlog, exaggerated by existing underfunding, changes to legal aid funding, reductions in the numbers coming to and staying with the Criminal Bar and more recently coronavirus. Court Statistics England and Wales (2023) (Sturge G., 2023) highlight the following salient information:

- 1.14 million cases were received by the courts, of which 98,000 were Crown Court cases.
- There is a case backlog, known as 'outstanding' cases, in both the Magistrates' and Crown Court. As at 09.2022, this totalled 347,820 in the Magistrates' Court, down from 422,000 in 2020. As at 09.2022, the figure for the Crown Court was 62,766, up from the last peak which was in mid-2021 of 61,000.

The performance of the Criminal Courts over the coronavirus period showed an increase ineffective and vacated trials¹ in 2020. The time that it takes between the suspect being charged with the commission of the offence and pleading not guilty, to the completion of the case has steadily risen since 2010. In the Magistrates' Court the median waiting time was 196 days in 2021, and albeit this research focuses on Criminal Courts, the waiting time in the Civil and Family Courts² and Tribunals³ was much longer. The number of unrepresented people at a hearing or trial, partly due to the reforms of legal aid (unavailability), has increased placing additional pressure on the courts to ensure that the proceedings are conducted in a manner which cannot later be deemed to have been unfair or otherwise challenged. The reductions in the court estate have also had an impact on the number of cases being heard, that is a matter collateral to this article and

is not explored here. The total number of cases typically handled annually by HMCTS (pre-pandemic) is circa 3.8 – 3.9M. In 2021 – 2022 the figure was 3.1M, an increase of 500,000 from the 2.6M it handled in the year 2020 – 2021. In the year 2021 – 2022, Her Majesty's Courts and Tribunals Service (HMCTS) had an annual net expenditure of £1.72B and employed 16,714 staff (equivalent to full-time) (HMCTS, 2022). These figures lend context to the mammoth task that HMCTS face each year but also provide impetus to explore these figures further to ascertain the nature of the proceedings and their outcomes, and where possible the related costs.

Case Related Statistics from the Magistrates' and Crown Court

In 2021, the Magistrates' Court received 1.14M cases and disposed of 1.17M, in January – June 2022 those figures stood respectively at 603,049 received and 624,693 disposed (Criminal Court Statistics Quarterly, 2022). There were 675,943 cases outstanding at the close of the second quarter in June 2022. Of these, 2.04% were indictable only offences and therefore would be transferred to the Crown Court for trial, and 17.81% were triable either-way and thus, could be tried in the Magistrates' or Crown Court⁴. The remainder of the cases, 80.15%, was for summary offences and/or breaches which would be disposed of in the Magistrates Court with or without a trial. In terms of outstanding cases, 1.84% were indictable only offences and therefore would be transferred to the Crown Court for trial, and 21.76% were triable either-way and thus, could be tried in the Magistrates' or Crown Court⁵. The remainder of the cases, 76.04%, was for summary offences and/or breaches which would be disposed of in the Magistrates Court with or without a trial. In 2021, the Crown Courts (Criminal Court Statistics Quarterly, 2022) received 98,000 and disposed of 96,000 cases. There were 49,172 cases received, 47,876 disposals and 59,687 cases outstanding at the close of the second quarter in June 2022.

Coronavirus Impact⁶ on Caseload

These statistics need to be considered in the context of the coronavirus pandemic, coronavirus

¹An ineffective trial is one which is rescheduled because it does not take place, for many reasons, on the day it was listed to do so. A vacated trial is one that is removed from the list (stood out of the list) prior to its hearing date.

²Waiting time in Financial Remedy cases in the Family Courts has seen a reduction, see note (5).

³Waiting time in the Immigration Tribunal has also seen a reduction, see note (5).

⁴The venue depends on the choice made by the accused and/or the acceptance of jurisdiction to try the case by the Magistrates'.

⁵See note (10).

⁶Chartered Institute of Public Finance and Accountancy (CIPFA). *The criminal justice system: How government reforms and coronavirus will affect policing, courts, and prisons*. UK: CIPFA.

measures and changes in the law sought to curtail the spread of the disease, these resulted in reductions in capacity. Some Court centres were completely closed, others were open but with severely restricted numbers of hearings. Eventual remote hearings and 'Nightingale Courts' (HMCTS, 2021) allowed the Courts to pick up some momentum again, but the impact has not been completely alleviated. It remains a judicial decision as to whether a case can be heard remotely, HMCTS swiftly introduced technology that would facilitate working online. By March 2021, 782 courtrooms, across the UK, were technologically equipped to facilitate this (COVID-19, 2020). By May 2021, 220,000 Magistrates' Court hearings and 130,000 Crown Court hearings were conducted online (video)⁷. Unfortunately, the number of outstanding cases has often outnumbered those that were disposed of, during 2020 the number rose to 569,400 and fell slightly to 511,000 in mid-2021. In mid-2022, the caseload reached 404,800 and has, in late-2022, risen in to 418,200. In the Crown Court, late-2020, the number of outstanding cases reached 62,475.

Reducing the Pressure

Most would agree that the problem needs a fresh perspective, so that resource is better managed, and the backlog strategically reduced. Furthermore, there need to be savings made in terms of cost but also in the use of the Court Estate (space). AI could help resolve some of the problems, through the automation of practical tasks or functions thus saving cost, freeing up the court estate and lawyer time, effort and making in-roads into the well-being of stakeholders. In this regard, the HMCTS Consultation on Modernising the Courts and Tribunals in 2018, was a missed opportunity and whilst it referred to 'digital service delivery' it did not touch upon the use of AI or acknowledge the opportunities in the Metaverse (HMCTS, 2018). AI, ML and DL can be used for automation, supportive algorithmic decision making, and the Metaverse could host a 'Digital Court Estate'. But prior to approaching the question on what aspects could be fully or partially automated, a brief discussion on the relevant aspects of AI and the Metaverse is needed.

AI, ML AND DEEP LEARNING, AND THE METAVERSE

This part of the article focuses on the technology and technological advancement; AI and the *Metaverse*.

Artificial Intelligence

Artificial intelligence (AI) is the name for the technology that enables a machine to emulate the behaviour of human-beings i.e., knowledge and understanding, and data, course intelligence, and therefore AI is the 'brain' inside the robot. Thus, an AI system can solve complex and technical problems, and are smarter (often smarter and more efficient) than their human-counterparts. Machine learning (ML) is a subset of AI, here the 'machine' automatically learns, like most human-beings, from past data (experience) without requiring specific programme to that effect. The benefits of AI include low human resource and talent management costs, increased accuracy, documentary review and summarisation, better time-keeping and due diligence, and of course speed (How artificial intelligence is changing the legal tech game, 2023), albeit there are a range of contrasting views and potential issues that are raised where 'law' or 'legal practice and services' is concerned (discussed later) (Greenstein S., 2022). AI, therefore, can free up time for more casework, relationship building and market share generating activities.

Machine Learning: Supervised, Unsupervised and Semi-Supervised Learning

Machine learning (ML) is a subset of AI (Bostrom N, 2014), the 'machine' learns, without specific programming, from past data – it could be stated that ML induces a form of educative reflectivity in AI (Yu-Cheng L., 2022). Supervised learning (SL) is a subset of ML, this is often called 'supervised machine learning' and is used to produce significantly accurate and sophisticated ML models. Labelled datasets are used to train algorithms to classify and predict outcomes with greater accuracy. SL requires input data to be fed into it, this is a task undertaken by experts and therefore it is not completely autonomous and nor is it devoid of issues such as discrimination or conscious or subconscious bias (discussed later). The veracity or 'weight' of the data is adjusted to fit the model in a cross-validation process. SL facilitates the speedy resolution of real-world problems at an unprecedented scale and with greater accuracy.

SL yields the required outcome by teaching the model using training datasets, these contain the necessary inputs and the right outputs. Thus facilitating, a continuous learning cycle over a time-period, measurement of loss function to assess algorithmic accuracy which adjusts the model up-to the

⁷See note (13).

point at of error mitigation. Where data mining is concerned, SL can be broken down into two categories: classification and regression. From an algorithmic perspective, classification assigns test data into several categories, recognises factors within that dataset and then from that it draws definitional or labelling conclusions. This type of algorithm is called a linear classifier and is made up of decision trees, random forest, and vector machines etc. Regression i.e., the logistical or polynomial algorithms, is utilised to help understand connections or relationships between factors that are dependent and independent to allow projections to be made. Many organisations use SL for example, for the analysis of customer views, the recognition of objects or images (search engines), and predictive analytics. SL can provide improved automation and deep data-insights, but it is vulnerable to human error this impacts negatively on algorithmic learning, and the result is that outcomes are flawed/incorrect.

Unsupervised learning (USL) uses unlabelled datasets, the model searches the data for hidden patterns through a process of discovery. Human intervention is not required. This can solve problems relating to cluster reduction, dimensionality, and association. MUSL is highly effective where common dataset properties are unknown; the tasks are:

- Clustering.
- Dimensionality reduction.
- Association.

Gaussian mixture, k-means and hierarchical models are the most popular cluster algorithms. This is a datamining technique that groups unlabelled data on the grounds of similarity or difference. It is common to use this for market segmentation. Complex dataset dimensionality reduction acts to reduce data that has several dimensions into a more manageable size whilst preserving its integrity (without loss of quality). This is widely used to pre-process datasets to clean them and improve their quality i.e., visual data. Association aims to discover relationships between the various factors in a dataset, it does so by using different rules. This is commonly used by streaming services (Amazon Prime, Disney+ and Netflix) in their respective recommendation engines that would 'suggest' what you should watch (or consume) next. Unlike its name suggests, USL is not completely automated. Human intervention is still needed; the end user may need to

validate the output variables. For instance, if the model learns that consumers simultaneously purchase groups of products the make-up of the group may need validation by data analysts. But USL is still less time consuming than SL and less costly because the need for domain expertise for dataset labelling is not required. Furthermore, USL can handle large amounts of complex and technical data (Arner *et al.*, 2016) with ease.

Semi-supervised learning (SSL) combines SL and USL. The dataset will be both labelled and unlabelled, it is used for datasets that are voluminous and where the features are challenging to extract. SSL is often used in healthcare (HealthTech) to assist in diagnosis. All these forms of ML, rely on the ability of organisations to reorganisation their data/datasets, have compatible systems already in place and assumes all data is recorded thus discounting informal or common knowledge.

Another constituent of AI and subset of ML is deep learning (Goodfellow, Bengio, Courville, and Bac, 2017). The system is trained for pattern identification, sounds, picture, text, and other datasets providing accurate predictions and insights. DL is often used for the automation of tasks including picture description, processing of natural language, voice-to-text conversion, auto-generation of subtitles for video (YouTube), analysis of documents in long-form, classification of images, and of course to analyse speech itself. DL is popular amongst financial service organisations and governments to detect fraud, for the service of chat boxes, facial recognition, and digital assistants such as Alexa (Amazon), Cortana (Li L., 2017) and Siri (Apple). DL is also used for 'tracking', this allows companies to create recommendations, personalised experiences, and services. Albeit this is now regulated under the General Data Protection Regulation 2016/679 (GDPR) (Cambridge Analytica scandal, 2018).

DL algorithms are modelled on the human brain, they are artificial neural networks. Software modules are nodes (artificial neurons) that use mathematical calculations for data processing. These nodes are used to resolve problems that are complex and/or technical. Deep neural networks comprise of three component layers: input, hidden and output. There will be numerous nodes that input the data, this is received and processed at several levels by the hidden layer which experiences behavioural change as further tranches/datasets come in (Goodfellow, Bengio,

Courville and Bach, 2017). The hidden layer will comprise of several hundred, and thus, a problem is analysed from several perspectives. For example, an image may be segmented so that each hidden layer analyses a separate feature. The answer is provided by the output layer either in the affirmative or negative (two nodes), but the outcome can be far more sophisticated if needed.

DL, as a subset of ML, has advantages over SL, USL, SSL because it processes unstructured data easily. In addition, DL can quickly analyse volumes of technical and complex data to reveal a variety of perspectives including those that the algorithm will not have been originally trained for and therefore it becomes more sophisticated. It can learn from the behaviour of users (USL), and it has great efficiencies in the analysis and categorization of data that is volatile meaning it can provide better outcomes for the purposes of fraud detection and prevention.

Some of the challenges are as follows; the algorithm must be trained on datasets that are of the best quality, to obtain that the dataset may need to be cleaned before it is used to train the algorithm. Furthermore, to use DL most effectively the organisation must have (a) large data storage facility for pre-processing of input data, and (b) computation capacity (infrastructure). Where (a) and (b) are not present then the results will be impeded (slower).

These AI technologies, allow 'machines' or sets of machines to comprehend, act, learn, experience, and sense like human-beings, but often more effectively than them. AI is many thousands of times quicker than its human counterparts, and by 2060 (Revell T., 2017) AI will be outperforming human-beings in all tasks from undertaking complex surgical procedures, providing healthcare, and in driverless transport systems (Singh *et al.*, 2022). Therefore, it is salient to explore if, and how, AI can assist with the issues in the Criminal Justice Process.

The Metaverse

The Metaverse is a digital world or universe (Hackl *et al.*, 2022). It is the buzzword in the digital and technological fields. The Metaverse is envisaged to be decentralised digital spaces that will incorporate augmented reality and virtual reality. Data is stored using block chain technology and consumers can 'own' digital goods. According to Hackl *et al.* (Hackl *et al.*, 2022) 2022 the metaverse forcesthe following three

paradigmatic shifts in what the internet is, and what being online means:

- Experience: contextual and gamified experiences are far more engaging. People need more than just consumption.
- Identity: digital persona is valued, and individuals want to carry that with them across the *Metaverse* and into the real-world.
- Ownership: people want skin in the game, regardless of where they choose to spend their time.

In the future, people's will live their lives online (internet), in the real-world and in the Metaverse. Consumers will spend digital money (crypto currency) and real money online, in the Metaverse and off-line. Salient to state that Interpol has already started its exploration of how it will police crime in the Metaverse (INTERPOL, 2022).

REGTECH (LEGALTECH/LAWTECH) AND A METAVVERSE DIGITAL COURT ESTATE

RegTech or LegalTech/LawTech (RT) is defined in this article as, the branch of AI whose application is focussed on solutions designed to modernise legal services and functions, judicial decision-making, and regulatory compliance processes. Salient to state that this includes staff development and training, and harnessing efficiency and cost reductions. Although AI, ML and RT have become common terms, they are still perceived with suspicion. Lawyers are no different, there has been some reticence to accept that the world has changed and is continuing to transform. AI has had a major impact on law firms, and therefore are more opportunities forthcoming.

Legal Services, Practice and Regulatory Compliance

In this section, the effects that AI has had on legal services, practice and regulatory compliance are considered.

Smart Contracts and Time-Consuming Duties

There are several duties and procedures that lawyers undertake daily. Legal research, collection of data, review of documentation, and contract generation and review are often time consuming and therefore expensive. They are also repetitive and are prone to mistakes.

AI is already assisting in research, review, and due diligence, which can involve large quantities of documents and data. In addition, AI can easily analyse contracts and feedback to lawyers for the purposes of advice they need to provide, and manage renewal, expiration and any other review or reporting obligations. This allows lawyers to focus on legal analysis, relationship building and assurance matters. Thus, the automation of contractual agreements, smart contracts⁸ either in natural language, code or in hybrid form, is an area that is developing rapidly both in terms of the framework required for their 'validity' and restitutionary remedies, which according to the Law Commission pose do not pose new novel problems albeit there are issues created in relation to jurisdiction and enforcement etcetera⁹.

In terms of research, the data on precedents, judgments, and outcomes (damages, penalties, or sentences), is already available via Lexis PSL and Thomson Reuters Practical Law, amongst other firms, and thus has become a primary source of information. AI can assist in evidence review, case analysis, and assist in the prediction of the likely outcome (predictive justice); LawGeex and Case Analysis Research Assistant (CARA) are two notable AI tools that assist in contract review and legal research. JP Morgan has been successfully using AI, 'COIN'(Contract Intelligence), to review its commercial contracts (Remus and Levy, 2015). Furthermore, AI can be used for case management, disclosure, and prospective directions generation. Therefore, AI can take over many time-consuming daily tasks, without suffering from fatigue, and natural levels of human error.

Compliance and Remote Working

Regulatory compliance has a huge cost attached to it both in terms of meeting the regulatory challenge and failure to comply in the form of penalties. However, law firms spend £Ms to achieve compliance. AI, specifically DL, can assist in this from engaging with machine

readable supervisory documentation, regulations, and law to highlight changes and even produce training material. DL can monitor and implement supervisory and/or regulatory changes and share that information with relevant stakeholders. AI, and the coronavirus pandemic, have changed the world of work. Law firms and the courts have adopted digital and remote forms of working, the former more so than the latter (Rosner T., 2021) (discussed above). A fuller examination of these aspects is beyond the scope of this article.

Metaverse a Digital Court Estate?

The Metaverse is dependent on AI, but it presents new opportunities in terms of stakeholder collaboration, attendance for example at administrative hearings or even reviews and trials, the receipt of legal advice from lawyers or meetings with the police or probation service via digital avatars. This provides impetus for the Criminal Justice System to begin engagement with AI (DL) and what it can assist with. For the Criminal Justice System this could mean courts that use virtual or augmented reality, a giant leap from the current basic and far from stable video platforms being used for remote hearings.

Negative Outcomes

One negative aspect to automation concerns reductions in human resource requirements; thousands of law-related jobs can be automated (Deloitte Insight Report, 2016). However, it is argued that firm will then retain high-qualified, more motivated, and skilled employees. Second, that the bigger firms can 'afford' AI, and thus, AI-poverty may create a fragmented legal system (equality is discussed later). Finally, the issue of cybercrime/threats, that need to be mitigated. Albeit the argument here is that the DL network is best placed to prevent these, it may foresee and prevent these better than its human counterparts. Again, these are matters that are beyond the scope of this article, but which are presented here for purposes of completeness.

APPLICATION OF AI AND THE METAVERSE TO ASPECTS OF CRIMINAL JUSTICE

The Criminal Justice Process can be arranged into the following stages:

- Stage 1, detection, charge, pre-trial case administration, (first appearances) plea, venue and bail hearing, and breach hearings.
- Stage 2, trial, virtual in court, pre-sentence reporting and sentencing hearing.

⁸ There has been growth in the use smart machine-readable and automated contracts in derivatives and financial markets. See, note (33) below.

⁹ Law Commission, UK Jurisdiction Taskforce's (UKJT). *Smart Legal Contracts: Advice to Government*. Law Com No 401. UK: HMSO. See, <https://www.lawcom.gov.uk/document/smart-contracts-2/>. In addition, relating to applicability of the convention (choice of law) the Law Commission argues '... Rome I Regulation, and the choice of law rules contained therein, applies to the binding contractual obligations that arise from, or are performed by, smart legal contracts as we use the term.' See, The Rome Convention 1980; The Hague Convention 2005; Rome I Regulation (Regulation (EC) No 593/2008; Convention on Jurisdiction and the Recognition and Enforcement of Judgments in Civil and Commercial Matters (EU) Official Journal L 339/3 of 21.12.2007 ('Lugano Convention'). Note, the latter no longer applies following the withdrawal of the UK from the EU, as the UK is now a 'third country'.

- Stage 3, post-trial administration and/or matters i.e., breaches of orders, and appeals etc.
- In terms of AI, all these aspects lend themselves to some level of automation including potentially:
- Police Charging Decisions, presented with model information and reasoning.
- CPS Decisions to Prosecute, presented with model information and reasoning.
- Case Strategy Analysis.
- Case Notes and Precedents, and the creation of summaries for training.
- Evidence Review (like document review as discussed above).
- Disclosure.
- Timely Distribution of CPS Case Files to Independent Counsel.
- Case Management i.e., selection of and compliance with directions etc.
- Probation Reports (Risk and Recidivism).
- Complete Administration of Minor Offences i.e., Road Traffic Offences, Offences Carrying Fines/Totting-Up Offences where accused pleads guilty.
- Minor non-imprisonable breaches and bail offences i.e., through the imposition of additional conditions etc.
- Pre-Sentencing Reports, presented with model information and reasoning.
- Updating legislation (sites) and guidelines (sentencing).

What follows briefly addresses some of the issues that automation may create, specifically in terms of Criminal Justice.

ISSUES CREATED USING AI IN THE CRIMINAL JUSTICE SYSTEM

AI poses several challenges, some of the biggest relate to *ethics, bias, and issues of discrimination, and pattern recognition*. For example, algorithms tainted through being trained using biased datasets or through

subconscious, colonial and/or historical bias¹⁰, will lead to biased outcomes and if so, how can this be mitigated. Specifically in relation to the use of AI in algorithmically influenced judicial decision-making accountability (Wachter and Mittelstadt, 2019), fairness, and algorithmic transparency (Blackbox) matters arise. The following considerations are therefore by no means exhaustive.

Courts and the Use of AI in the UK

Master of the Rolls Sir Geoffrey Vos stated, in a speech (Vos G, 2022) that by 2040 those seeking to resolve legal disputes would do so through a court-based online civil, family and tribunal justice system (digital justice system), that is complemented by an online pre-action dispute resolution system. The conversation in relation to AI and UK Justice has focussed mostly on civil law, the conversation in relation to the criminal justice system lacks the same level of energy (National AI Strategy, 2021). In addition, there is a distinct lack of discussion relating to AI and its potential supportive role in the provision of services and informed decision-making. It is however accepted that AI offers efficiency, speed, and scale; collaboration between nations in developing AI in this respect also gives impetus for discourse.

Algorithmic Bias

Algorithmic bias leads to AI systems that are systemically unfair to certain groups or individuals. Authorities have been using AI to calculate recidivism, COMPAS (USA) and Harm Assessment Risk Tool (HART) (UK). The former is a good example of machine bias, a study by ProPublica on machine bias in predictive algorithms that are used for parole decisions showed that the AI was only 61% accurate. This was a longitudinal study over 2-years, the AI had a propensity to mark black offenders as 'high risk' and white offenders as 'low risk', the results showed the opposite; the black offenders had a much lower recidivism rate when compared to the white offenders. In *State v Loomis* 881 N.W.2d at 769, the Supreme Court of Wisconsin held that the use of a proprietary risk tool (COMPAS) designed to assess recidivism risk at sentencing was lawful. The court held that it did not violate the right to be sentenced individually and based on accurate information. The authors, North pointe Inc.,

¹⁰Note the EU report on this; see, The Council of the EU. Access to Justice – Seizing the Opportunities of Digitalisation. 8 October 2020. At, <https://data.consilium.europa.eu/doc/document/ST-11599-2020-INIT/en/pdf>.

refused to disclose the methodology to the court and the defendant even though the score was referenced by the State and the Court when passing sentence. The algorithm assessed Loomis as 'high risk' and therefore he was denied the possibility of parole, the court did place restrictions on the use of COMPAS as follows:

- The algorithm cannot be used when deciding to someone or to determine the length of the sentence.
- An independent rationale for the sentence must accompany the score/decision.
- Pre-sentence reports must include a 5-part warning about the limited use of the algorithm.

The outcome is troublesome, as it demonstrates a misunderstanding on how algorithms work i.e., automation, subconscious or design bias, and what safeguards would be appropriate to mitigate against such bias etc (Desai and Kroll, 2017). Furthermore, it becomes difficult for a decision-maker to depart from an outcome recommendation made by technology that is perceived to be highly accurate even though statistically, to date, it has shown need for improvement. In contrast, the UKs HART system (Durham Police) has been accused of decision bias because it uses postcodes as part of its risk assessment and thus, entire communities being labelled as 'high risk', even though Durham Police has indicated they would release the methodology to an 'algorithmic regulator (Dubber, Pasquale and Das, 2020). Thus, improvements (Kehl and Kessler, 2017) are needed in relation to the quality of the dataset i.e., data labelling issues and a lack of transparency (Blackbox) in terms of the basis upon which the decision is made so that it is open to audit, due process and appeal. Some solutions proposed include algorithmic transparency standards¹¹, model-agnostic explanations (Ribeiro, Singh and Guestrin, 2016) and adjusting datasets to mitigate bias (Danks and London, 2017). In addition, in terms of legal safeguards, a rebuttable presumption could be put in place as follows; 'AI outcomes are not neutral', this would require the person or body seeking to rely on that as part of a process or in evidence, must prove otherwise

through an explanation of the model and methodology that was used to arrive at a particular outcome.

Human Rights

There are several rights issues that may arise, the Committee of Experts on Internet Intermediaries (MSI-NET) at the Council of Europe has concluded as such (Committee of Experts on Internet Intermediaries, 2020). The matters for consideration include:

- Fair Trial.
- Data Protection.
- Due Process.
- Education.
- Effective Remedies.
- Freedom of Association and Assembly.
- Freedom from Discrimination.
- Free and Fair Elections/Political Freedom.
- Freedom of Expression.
- Freedom of Thought.
- Justice.
- Social Welfare.
- Privacy.

Given the limits in this research, what follows is a brief consideration of two of the most notorious, individual data protection and the right to a fair trial.

General Data Protection Regulation 2016/679 (GDPR)

The General Data Protection Regulation 2016/679 (GDPR) sets out the legal position in relation to the protection of individual's where automated decision making that legal or significant effects on them are being made. It limits the circumstances in which an automated decision can be made. Recital 22(1) states: 'The data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her.' Therefore, this type of decision-making can only occur where it is necessary for the performance of

¹¹IEEE Standards Association. *P7001 - Transparency of Autonomous Systems*. Also, IEEE Standards Association. *P7003 - Algorithmic Bias Considerations*. See, <https://standards.ieee.org/initiatives/autonomous-intelligence-systems/standards/>.

a contract, authorised under domestic law that applies to the controller, or is based on consent (unequivocal). Recital 22(2)(b) states 'Paragraph 1 shall not apply if the decision: ... (b) is authorised by Union or Member State law to which the controller is subject, and which also lays down suitable measures to safeguard the data subject's rights and freedoms and legitimate interests'¹². What is important to note here is the requirement for safeguards, Recital 22(3) states that the individual has '... at least the right to obtain human intervention on the part of the controller, to express his or her point of view and to contest the decision'. Thus, the individual must be provided with information about the processing, and he, she or they must be able request human intervention or challenge the decision and therefore, a process must be in place for that, as well as a system for checking that the automated system is working as per its brief. The EU is proposing a new Artificial Intelligence Act¹³ that seeks to regulate automated decision-making. UK government has proposed to domestically partially repeal or at least amend Recital 22 (A New Direction, 2021) to facilitate greater levels of automated decision-making, but since then has not given sufficient details on its replacement or safeguards. One factor seems clear, though, the UK government is not in favour of human review. Thus, it is only right that the model/methodology are subject to scrutiny if required, and as suggested above are provided where use in the process.

The Right to a Fair Trial

The Right to a Fair Trial is set out in Article 6 of the European Convention on Human Rights and Fundamental Freedoms. This includes effective participation¹⁴, and where AI and automated decisions are concerned this must again, and at the very least, include the ability to challenge (Edwards and Veale, 2018) the automated decision/outcome (evidence¹⁵) that the opposing party seeks to adduce as evidence and/or as part of a procedure i.e., bail, probation report or sentencing. In addition, consideration should be given to exclude such evidence, or whether a judicial direction should be

given to the triers of fact (jury/magistrates) on the weight to be afforded to such evidence (etc.). Otherwise, there is a risk of miscarriages of justice (Artificial Intelligence and Law, 2022) and of greater numbers of appeals, which conflicts with the need for reductions in case backlogs. It should also be noted that hearings are in public, so that justice can be seen to be done; and as discussed earlier the proprietors of such algorithms are often reticent to share the model/basis of the decision and thus, procedures relating to partial in-camera proceedings may also be necessary where this 'evidence' is adduced and/or examined in detail.

CONCLUSION

The legal profession is at a junction in its trajectory, like many other sectors before it, transform and innovate using AI seems to be the general attitude, with salient questions that require pragmatic solutions. However, the conversation in relation to UK Civil Justice is moving ahead, with the Criminal Justice System lagging significantly behind. The UK government has indicated willingness to move forward and rewrite some of the law relating to automated decision making whilst seeking to protect those that are most at risk from bias and discrimination etc. The EUs approach is far more citizen-centred, seeking to build on and modernise the current legislation including the GDPR. From a human-centric perspective, the risks that automated decisions pose must be mitigated to avoid miscarriages of justice and additional expense. There are clearly aspects in legal services, the functions of lawyers that can be automated without posing too much risk to the stakeholders i.e., compliance and regulatory reporting, smart contracts, task management, training and updating systems and processes, document and evidence review etc. More substantial use of AI in judicial decision-making requires a clear framework that addresses the issues discussed above, only then can a viable case be made for extensive automation i.e., accountability and transparency, bias and fairness, and the ability to challenge the outcome. This means that proprietors must be willing to allow their AI to be subjected to scrutiny and challenge. Change requires stakeholder buy-in, and therefore, there is a need for greater academic (law) debate surrounding this area; what a move to a modern AI assisted Criminal Justice System would require, and how the above issues can be resolved. Until that point progress may remain equally muted.

¹²See also, *Law Enforcement Directive* (EU) 2016/680. This repeals *Council Framework Decision* 2008/977/JHA [2016] OJ L119/89.

¹³*Proposal for a Regulation of the European Parliament and the Council Laying Down the Harmonised on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts*. See, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0206>

¹⁴For a case example see, *Stanford v the United Kingdom* [1994] ECHR 6.

¹⁵Rights in relation to this are specifically protected under the Convention; see, *Lucá v Italy* [2001] ECHR 33354/96. In relation to fairness and what amounts to a breach of Article 6 see, *Al-Khawaja v United Kingdom* [2012] 54 EHRR 23.

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